# BUILD_ME

## IKI Project: Accelerating 0-emission building sector ambitions in the MENA Region

**National Intermediate WS, BUILD_ME 3rd Phase**

Amman, Jordan

May 2024

# Welcoming

Presenter: Eng. Firas Alawneh, RSS

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# Introduction of the workshop objectives and the agenda

Presenter: Eng. Mo’tasem Safi

# Workshop objectives

1. Provide an update about the project activities and collaborations.
2. Raising awareness about the newly adopted EPC in Jordan.
3. Discussion and feedback from experts and stakeholders.
4. Outline the next steps of the EPC and BUILD_ME project.

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# Agenda

| | |
|---|---|
| 09:30 – 10:00 | Registration |
| **10:00 – 10:15** | **Welcome remarks** |
| **10:15 – 10:30** | **Overview of the BUILD_ME project** |
| **10:30 – 10:45** | **The importance of energy performance certificates for buildings** |
| **10:45 – 11:30** | **EPC and BEP Tool Updates** |
| 11:30 – 12:00 | Coffee Break |
| **12:00 – 12:45** | **Outlook: What are our next steps?** |
| **12:45 – 13:00** | **Discussion and listening to feedback about the tool and certificate** |
| **13:00 – 13:15** | **Closing remarks and group photo** |
| 13:15 – 14:30 | Lunch and Networking |

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# Overview of the BUILD_ME project

Presenter: Eng. Sawsan Bawaresh, RSS

# Short introduction to the project

# Introduction to the BUILD_ME Project

# Overarching storyline of BUILD_ME phases

## Phase 1
2016 - 2018

### Analysis & Recommendations

- Analysis of boundary conditions and stakeholder perspectives
- Formulating recommendations for implementation

## Phase 2
2019 - 2022

### Prepare the Implementation

- Developing tools for implementation
- Connecting with stakeholders to initiate the implementation

## Phase 3
2022-2025

### Support the Roll-Out

- Piloting the roll-out to reach implementation on all levels
- Scaling up activities to enlarge the impact



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# Background of the BEP Tool

# Problem Identification

The lack of a baseline hindering the assessment of low energy buildings in the BUILD_ME countries

**Lack of enforcement and/or availability of EEBCs**

**Lack of data about BaU constructions**

**No benchmarking of buildings' energy performance**

**NO**

**energy consumption baseline**

**Bottleneck**

**To finance energy efficient buildings**

# Building Energy Performance (BEP) tool

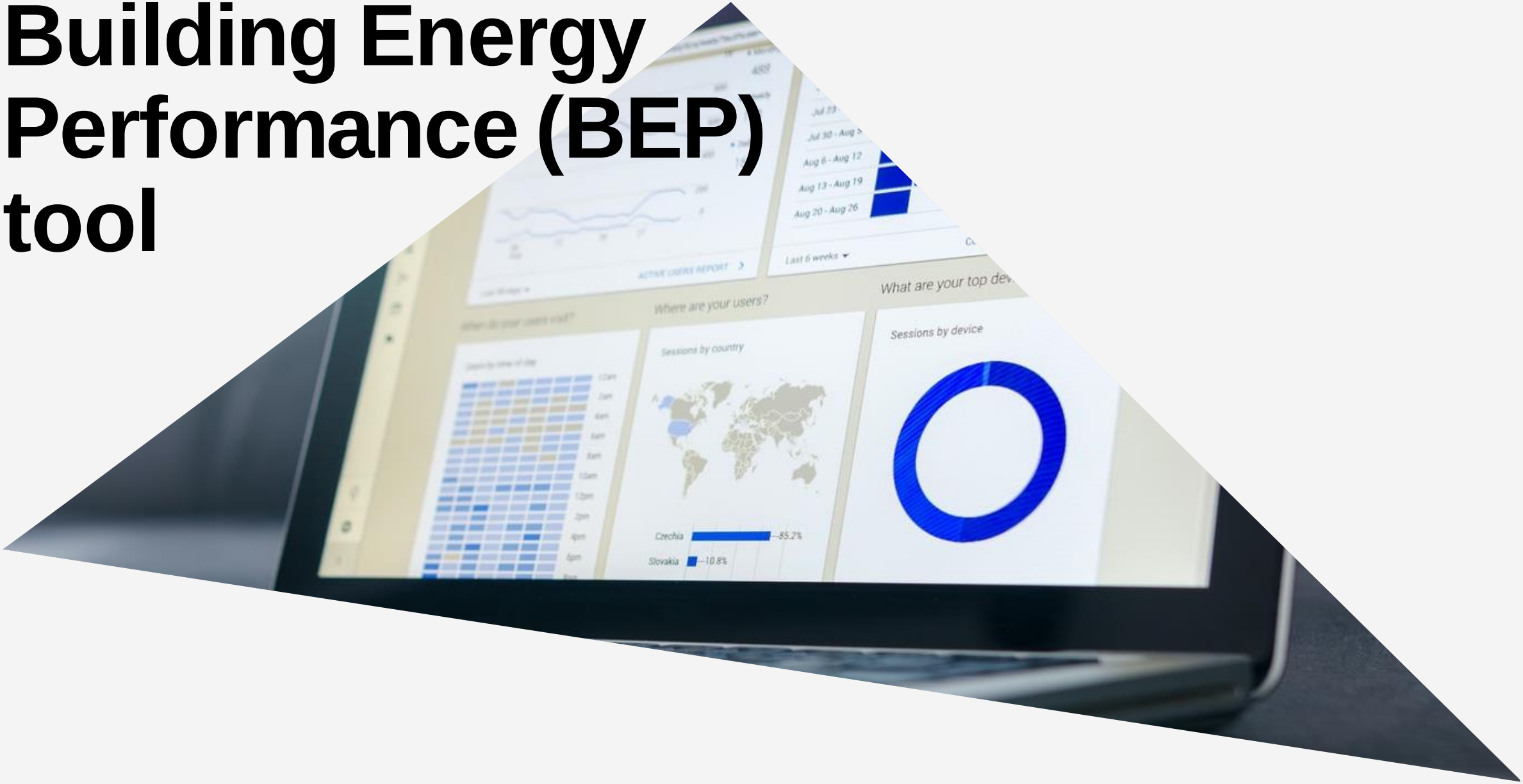


Photo by Lukas Blazek on Unsplash

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# Objective of the BEP Tool

## Easier access to financing for energy efficient buildings

How to design and finance an energy efficient project?

**BEP Tool shows:**

- ✓ [20-30]% energy saving in comparison with **baseline**
- ✓ Financing available at local bank

Intermediating **bank grants credit** based on trusted classification scheme

**Project is realised** as energy efficient building

# Our Integrated Solution

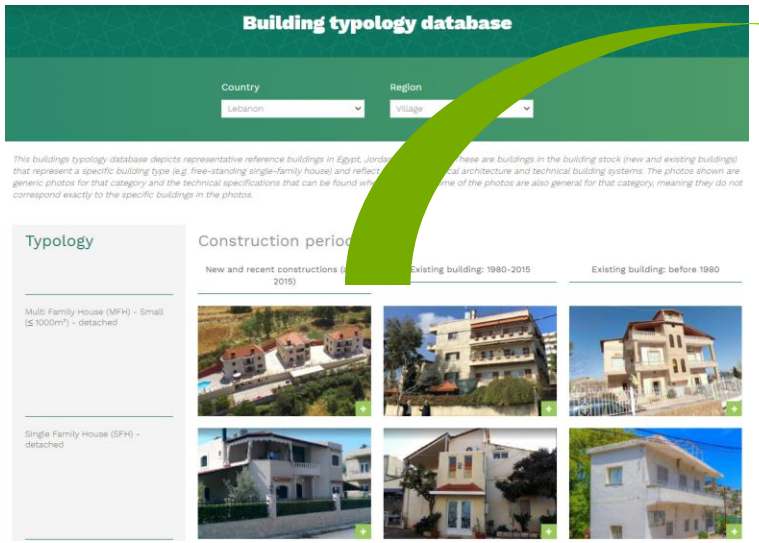
## Define own baselines and develop tailored energy labelling scheme for new buildings

- Data from real constructions not older than 3 years
- At least 5 cases per building type covered in each country building typology
- Data from subsidy programs, literature, interviews with relevant stakeholders, permits documents etc.

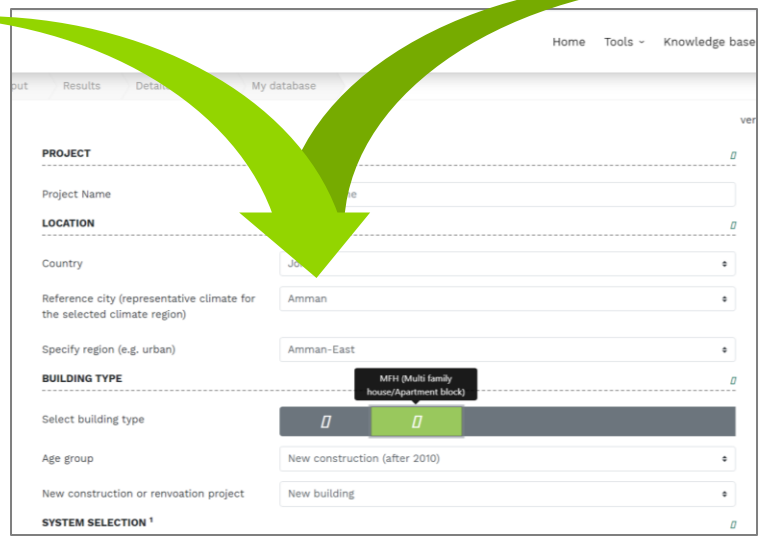
- BEP tool based on ISO 52016, fed with local data used as calculation engine.

- Researched buildings in building typology represents baseline, which is shown in the BEP Tool as default value.

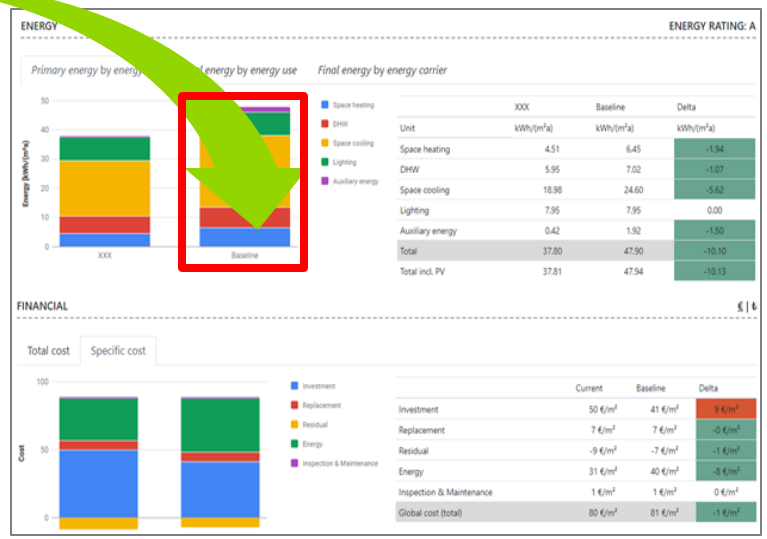
### Reference Buildings and Building Typology




### BUILD_ME Building Energy Performance Calculation tool




### Classification of buildings compared to baseline



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# Logic of the BEP tool

## Customisable, transparent, adapted to the MENA region

### Performance of energy efficiency measures & RE

- Calculate energy demand of building
- Compare it to the country's baseline buildings or other personal projects
- Determine the **energy savings** of single or multiple efficiency measures and the use of renewable energies

### Calculation of monetary savings

- Identify **cost savings** resulting from the energy efficiency measures and get the cost optimal case
- **Local market data** is already available for Jordan (investment cost,energy prices..etc or enter e specific project values

### Free web application

- Tool is **free to use as a browser application**
- Optimized for **mobile devices**
- Provides **default input values** for faster application, but also **advanced mode** for experienced user

### Proven methodology

- Energy Calculation is based on the international norm for modelling thermal building performance (EN ISO52016)
- The BEP tool was already successfully applied in various projects and countries
- Full transperancy with a detailed manual , incl. all calculation steps and internal assumptions.

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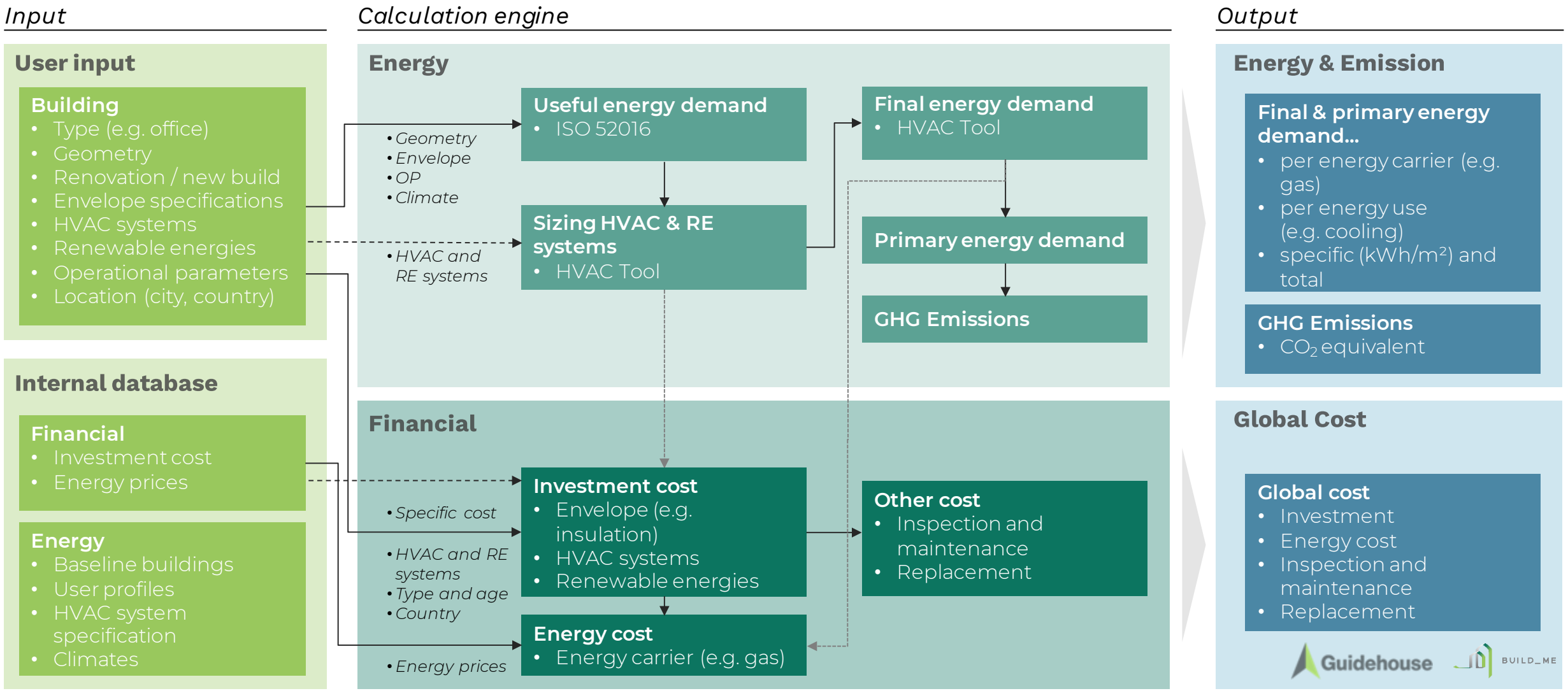
# Calculation methodology



# Conclusion BEP Tool

Developed for the MENA region: Database from **local partners** & **international** calculation methodology


Internal market data is **collected from local partners** for Egypt, Jordan and Lebanon.

**International energy calculation methodology.**

**Country specific climate data**, incl. multiple climate zones within each country.



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1970
2020

# Royal Scientific Society
# Building Research Center (BRC)

أهمية شهادات اداء الطاقة للمباني وأثرها ودور الجمعية في مجال الأبنية

# Green Buildings and Cities Division

**Authorized**

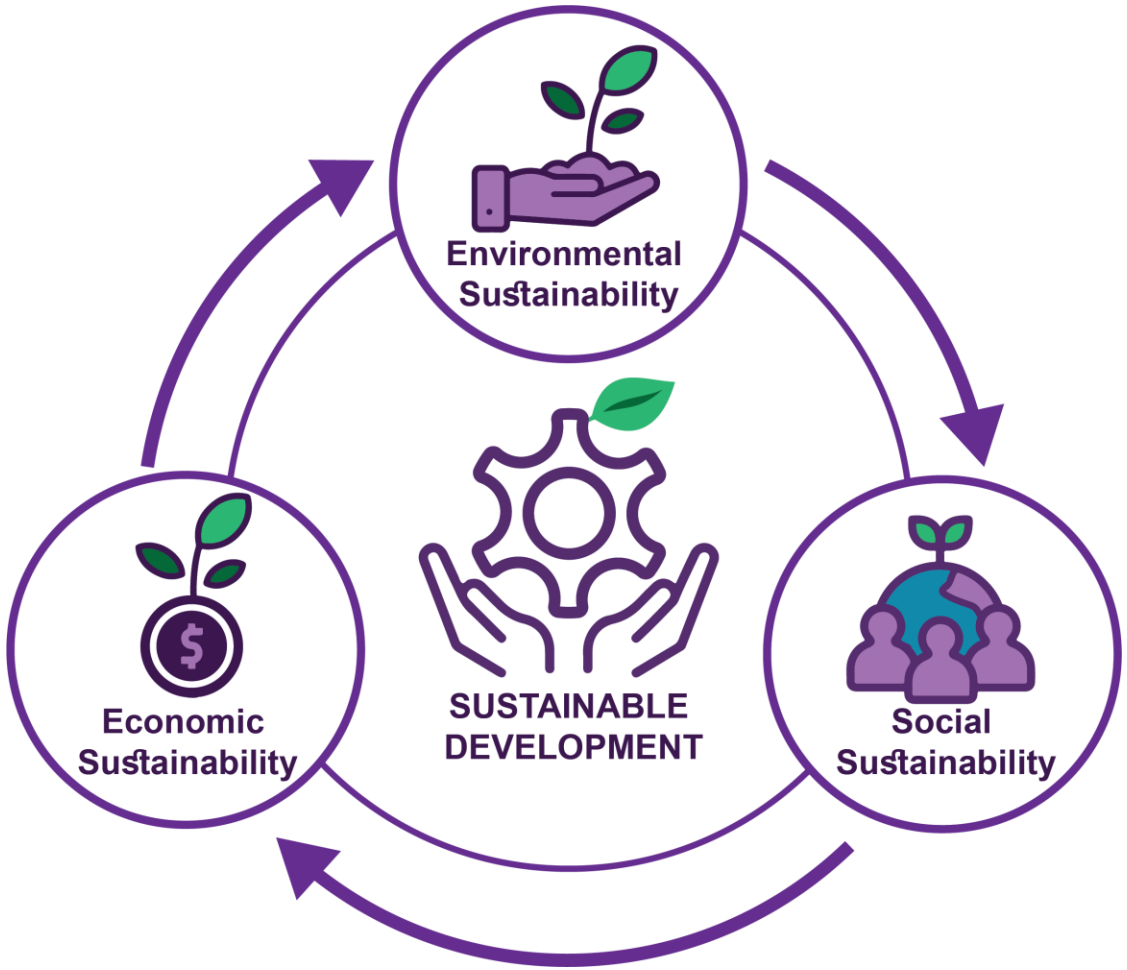
JNBC → RSS

## Main Services

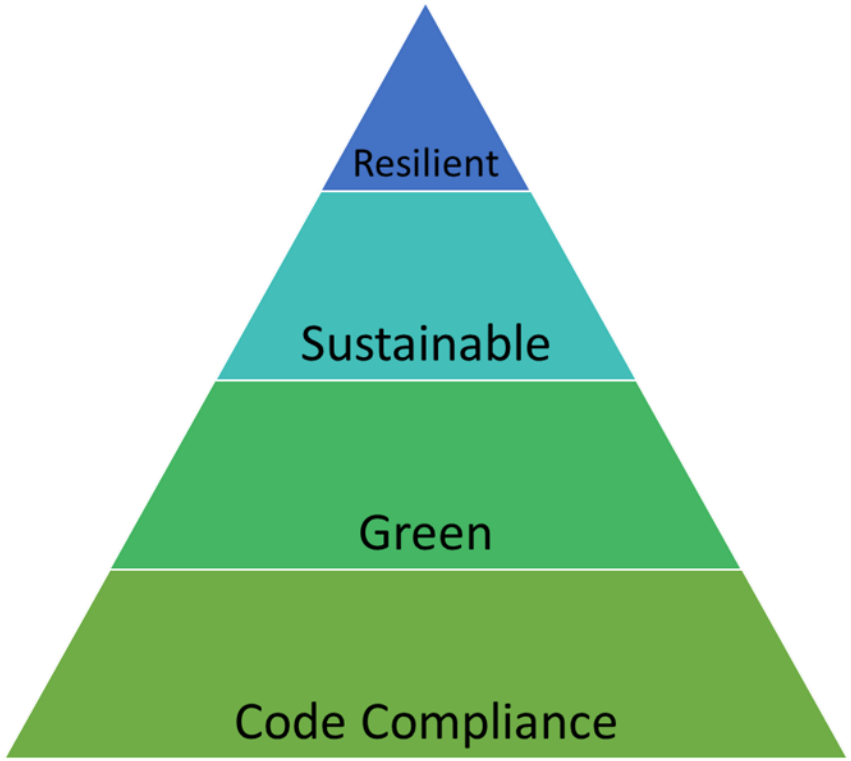
### Assessment

providing Project Management and engineering supervision and consultancy for the construction field in Jordan.





Environmental Sustainability
Economic Sustainability
SUSTAINABLE DEVELOPMENT
Social Sustainability

# RSS



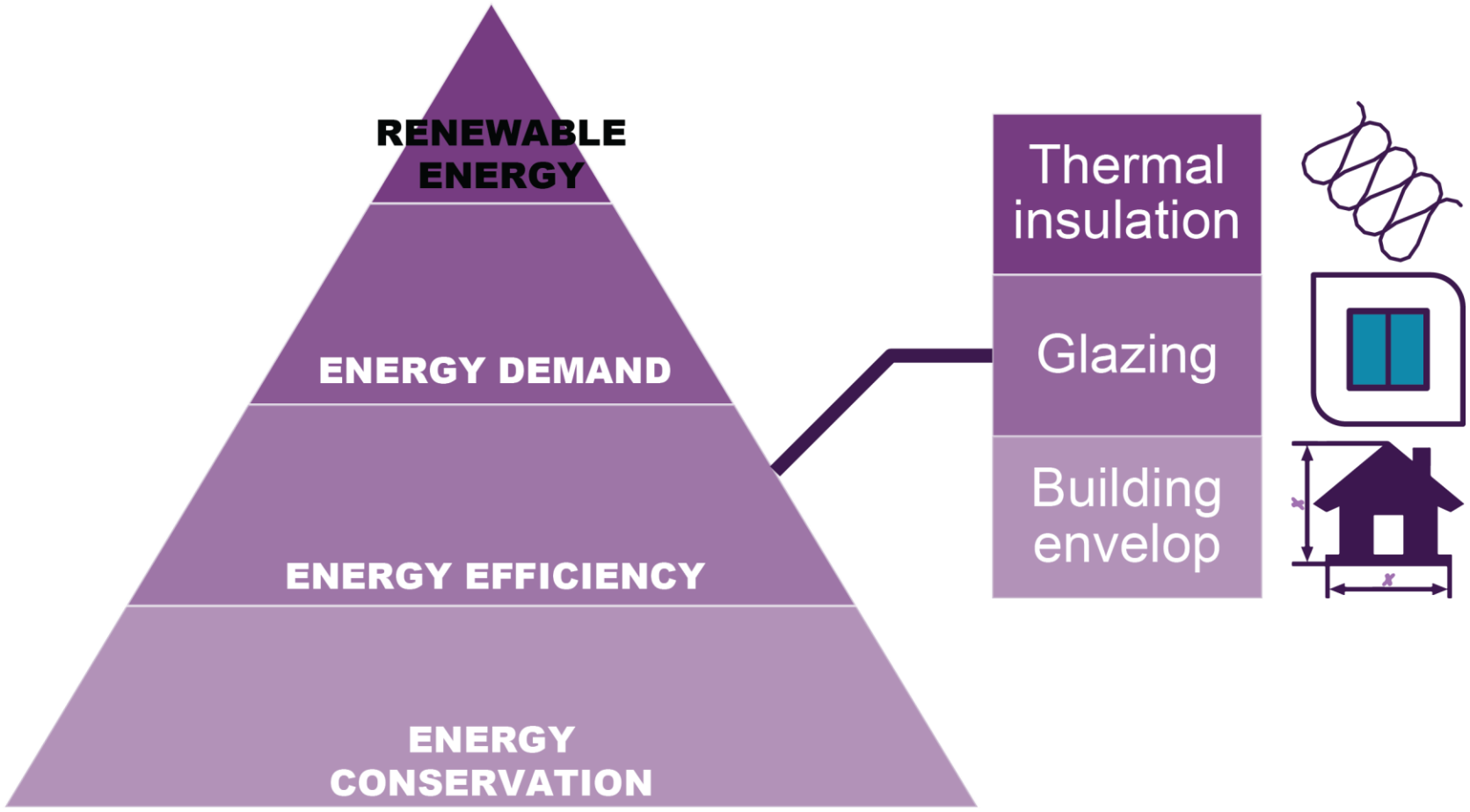

CCA, Disaster Reduction and multi-Risk Assessment

Inclusive Process based on Full Life Cycle Assessment and planning, to ensure meeting three pillars Environmental, Social, and Economic development

Achieve exemplary performance above the codes' requirements

Minimum Requirements and Performance Baseline

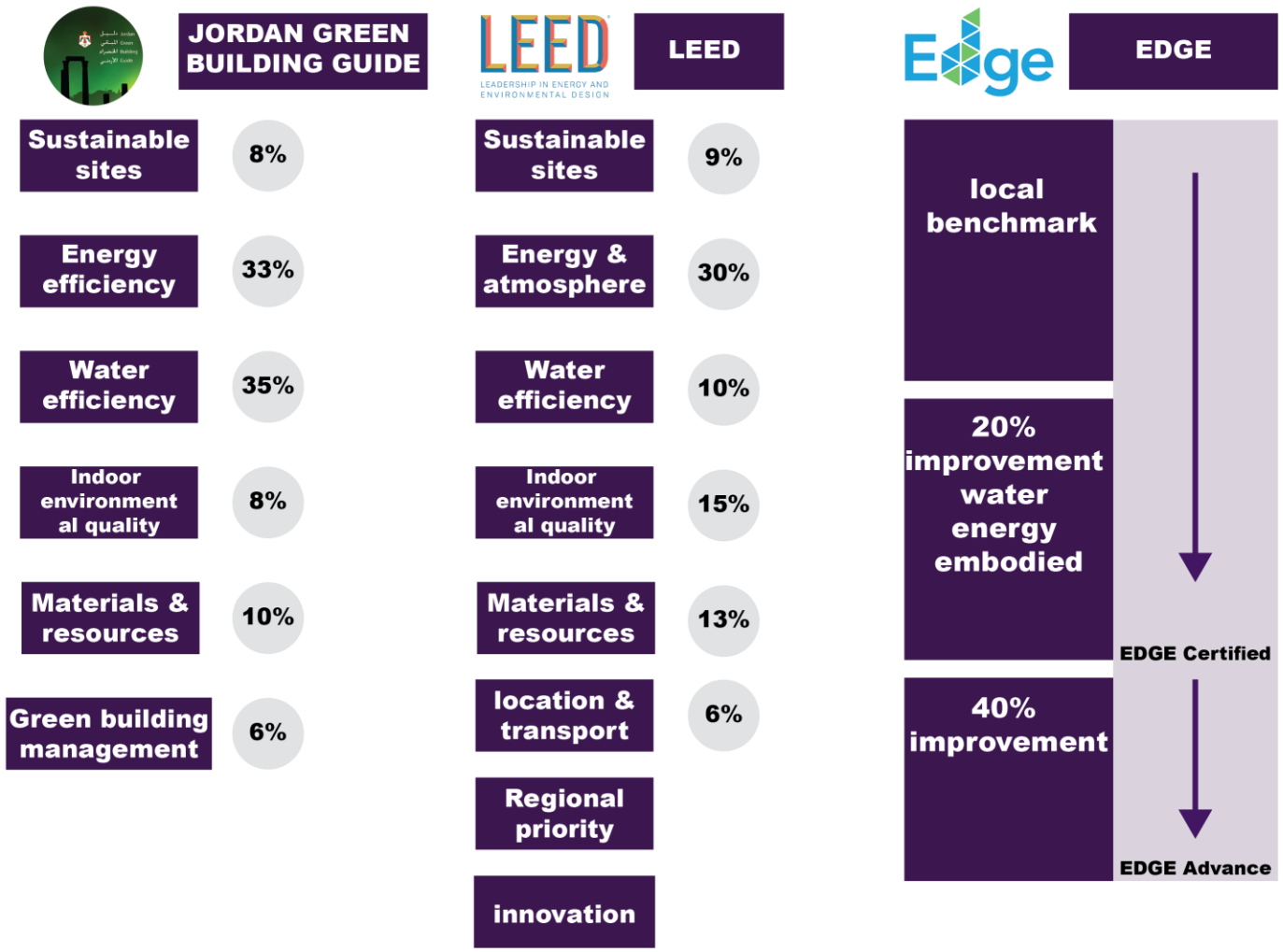
# أولويات ترشيد الطاقة



# National building local codes and guidelines in Jordan

- Thermal insulation code
- Natural ventilation code
- Natural lighting code
- Internal lighting code
- Energy efficiency building code
- Solar energy code
- Mechanical ventilation code
- Central Heating code

- Jordanian green building guide
- Energy efficient buildings code guide
- Solar energy code guide


JORDAN GREEN BUILDING GUIDE
Sustainable sites
8%
Energy efficiency
33%
Water efficiency
35%
Indoor environmental quality
8%
Materials & resources
10%
Green building management
6%
LEED
LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
LEED
Sustainable sites
9%
Energy & atmosphere
30%
Water efficiency
10%
Indoor environmental quality
15%
Materials & resources
13%
location & transport
6%
Regional priority
innovation
Edge
EDGE
local benchmark
20% improvement water energy embodied
EDGE Certified
40% improvement
EDGE Advance

# Certificate Scheme Design phase

# Construction Phase

# Occupation

## Occupation

**J.N.B.C contactin official competent authorities to grant incentives**


# Proposed Incentives by certain bodies in Jordan

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# مشروع "التحول نحو قطاع المباني الخالية من الانبعاثات الكربونية في منطقة الشرق الأوسط وشمال إفريقيا" BUILD_ME

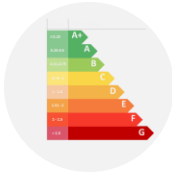
مجلس البناء الوطني الأردني

يناير 2024

IKI INTERNATIONAL CLIMATE INITIATIVE

Federal Ministry for Economic Affairs and Climate Action

# لماذا تعد شهادة التقييم الطاقي للمباني قيمة مضافة للأردن ومجلس البناء الوطني الأردني



## أداة في السياسة

- تعتبر أداة هامة في السياسة الوطنية للبيئة المبنية
- تعتمد الشفافية فيما يتعلق باستهلاك الطاقة للمباني
- تسمح بصياغة السياسات المستهدفة.
- تتماشى مع متطلبات المبادرات العالمية مثل اختراق المباني

## الربط بالتمويل

- الربط مع المؤسسات المالية الدولية والوطنية
- تسريع الوصول إلى التمويل للمباني كفاءة الطاقة.
- أسعار معقولة لمطوري المشاريع كونها العملية بسيطة وسلسة ومأتمتة.
- خلق وظائف جديدة (خبراء في شهادة التقييم الطاقي للمباني، ومدققو شهادات التقييم الطاقي للمباني)

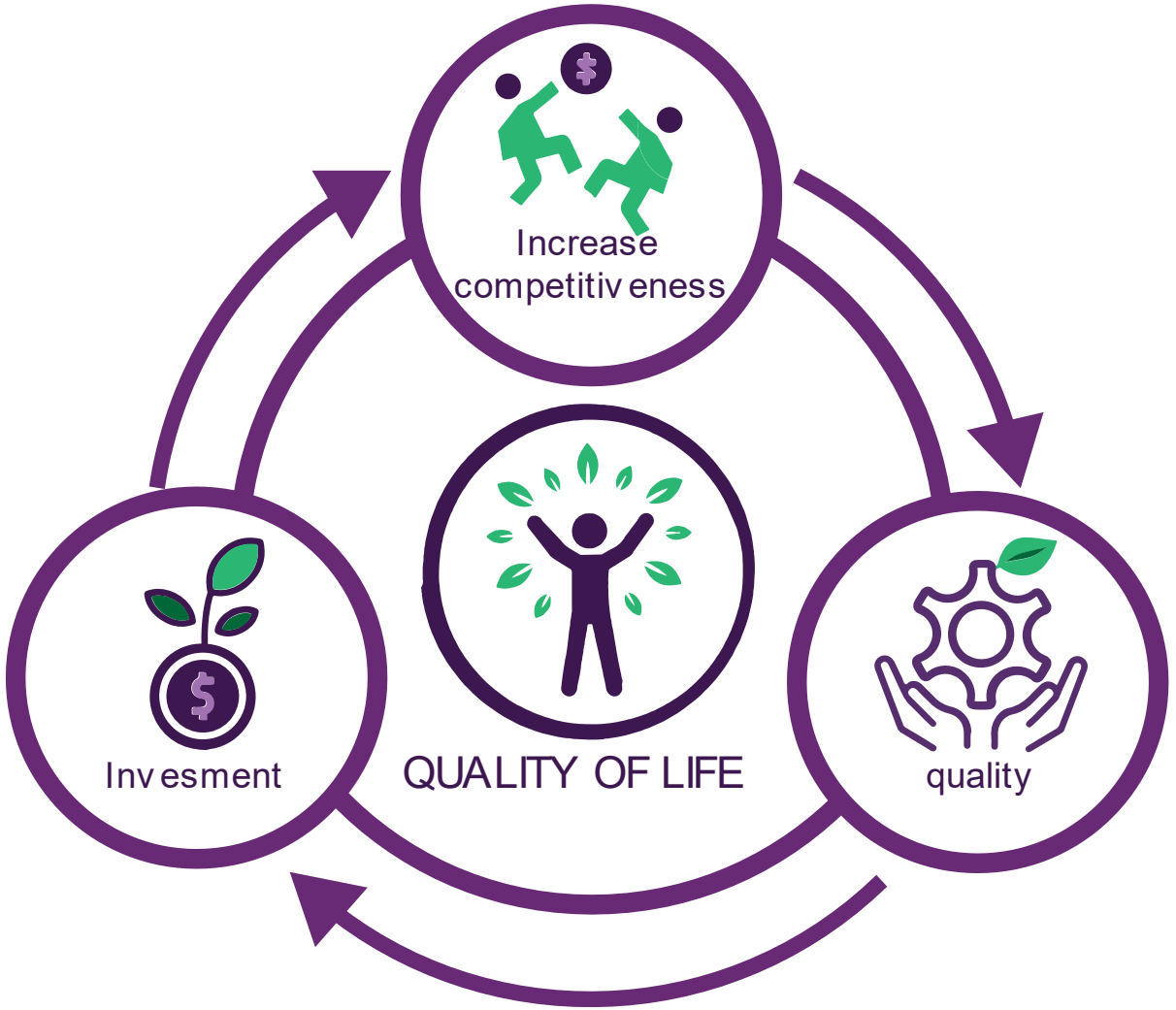
## التركيز على الطاقة

- شهادة تركز فقط على الطاقة
- التكامل مع المخططات المستدامة الأخرى.
- تعقيد أقل وفرصة تنفيذ أعلى.
- إضافة التحليل الاقتصادي، سريع ومرئي - كان موضع ترحيب كبير من قبل مطور المشروع.

## أعدت خصيصاً للأردن

- تم تطويرها من قبل خبراء وطنيين ودوليين
- معيار دولي معتمد ISO (52016) يتكيف مع السياق الأردني.
- موثوق بها من قبل الخبراء والمؤسسات المالية ( GGF، البنك الأوروبي لإعادة الإعمار والتنمية ، إلخ.)
- سيتم تسليمها إلى مجلس البناء الوطني الأردني مع الحقوق الكاملة مما يسمح بمزيد من التطوير

**تمكين الحكومة من قيادة التمويل المتسارع لقطاع البناء**


Increase
competitiveness
Invesment
QUALITY OF LIFE
quality

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Royal Scientific Society

1970
2020

# Thank you

Eng. Malik Al - Alwaan
Manager of Green Buildings & Cities Division
Email: malik.alwaan@rss.jo
Mobile:0795901762

# Planned roll-out of the EPC in Jordan

Nidal Abdalla, RSS

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# Energy Performance Certificates (EPC) Scheme

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# Objectives and scope of the Energy Performance Certificate (EPC)

The BEP tool connected with EPC for easier facilitating of Green finance

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## Customized for the local conditions

The EPC and BEP tool and the EPC will provide a new channel for project developers interested to construct EE projects. (no competition with the existing schemes).

## Energy Focused

The EPC and BEP tool focus on energy savings and the associated GHG emissions.

## Locally managed by official entities

The EPC and the tool will be managed and owned by the official entities (RSS) responsible of implementing the codes and/or the construction sector.

## Voluntary EPC towards mandatory

The EPC will initially start as a voluntary scheme.

Ensuring a transition to mandatory scheme – relevant to become one of the key policy instruments



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# Defining the EPC Scheme concept

## Target Market

**E.g., New buildings**

- Residential buildings: Single family houses SFH and Multi-family houses MFH.
- Offices and schools


## Rating score

**Performance scale system (Labelling scheme)**

- performance is labelled in a scale from A to G.

## Asset rating

**two levels of verification**

- Design phase.
- Post Construction phase.

# Roadmap formulation for setting the new EPC Scheme

## Steps to successfully roll-out the new scheme

1. Ownership and management
2. Certification scheme
3. Operational framework
4. Testing and roll-out
5. Evaluation and update



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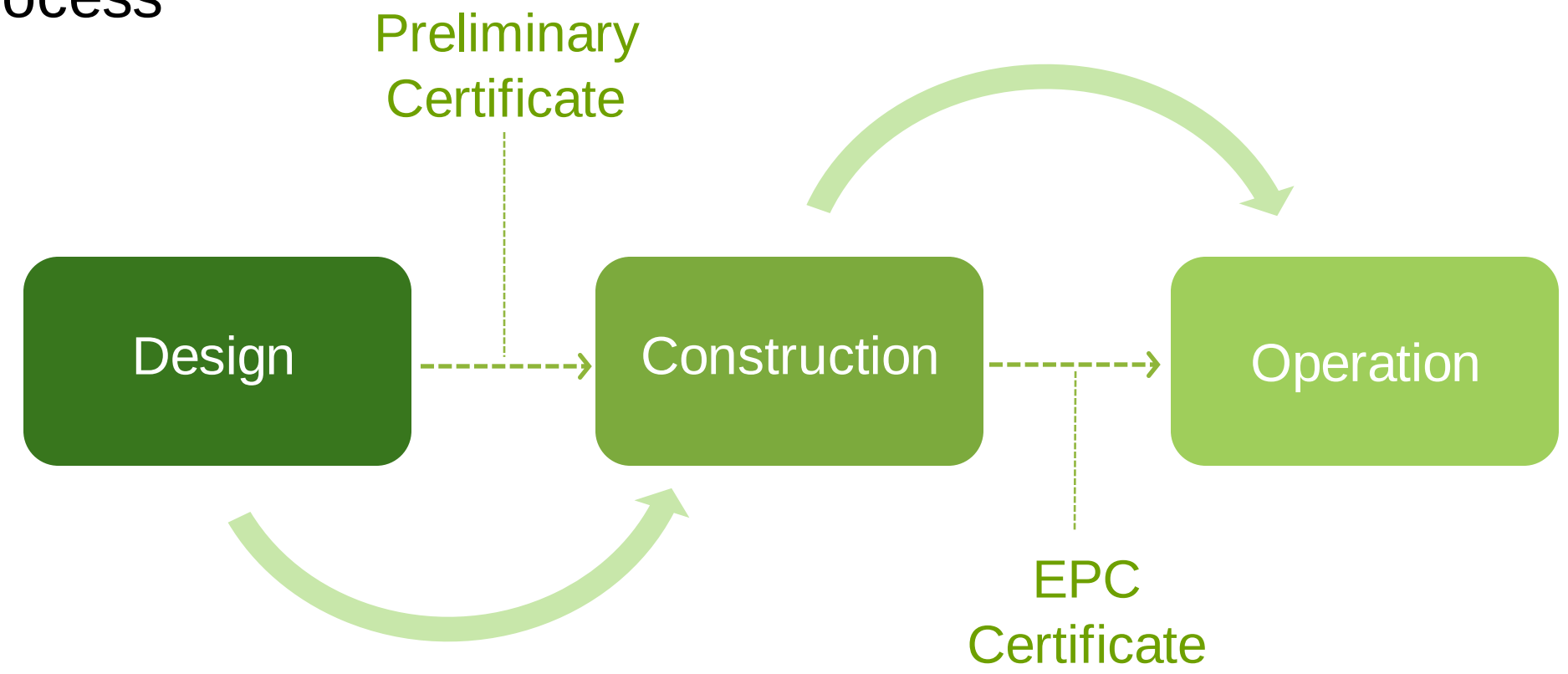
# Roadmap formulation for setting the new EPC Scheme

## Action plan for roll-out of scheme

| 1 Ownership and management | 2 Certification scheme | 3 Operational framework | 4 Testing and roll-out | 5 Evaluation and update |
|---|---|---|---|---|
| • define goals, staffing<br>• Providing communication, link to other schemes. | • scope.<br>• collect stakeholder feedback on the concept.<br>• establish technical and management of data repositor. | • Trainings.<br>• quality control, technical auditing, screening, surveillance. | • training of assessors.<br>• awareness raising & marketing.<br>• collect & review data, identify kinks. | • review and update methodology.<br>• facilitate integration with other schemes. |

# Scope

## EPC process




Initial **Preliminary Certificate** for design stage and a final **EPC Certificate** after construction stage. There is no EPC certificate for operation stage.

# Process in detail

## EPC process

**Expert Hiring**

- Project Registration
- Design Inputs into EPC
- Design Documentation Submission

**Auditor Review**

**EPC Check by RSS**

**Preliminary Certification**

**As-Built Inputs into EPC**

**Project Final Registration**

**As-Built Documentation Submission**

**Auditor Review and Site Audit**

**EPC Final Check by RSS**

**EPC Certification**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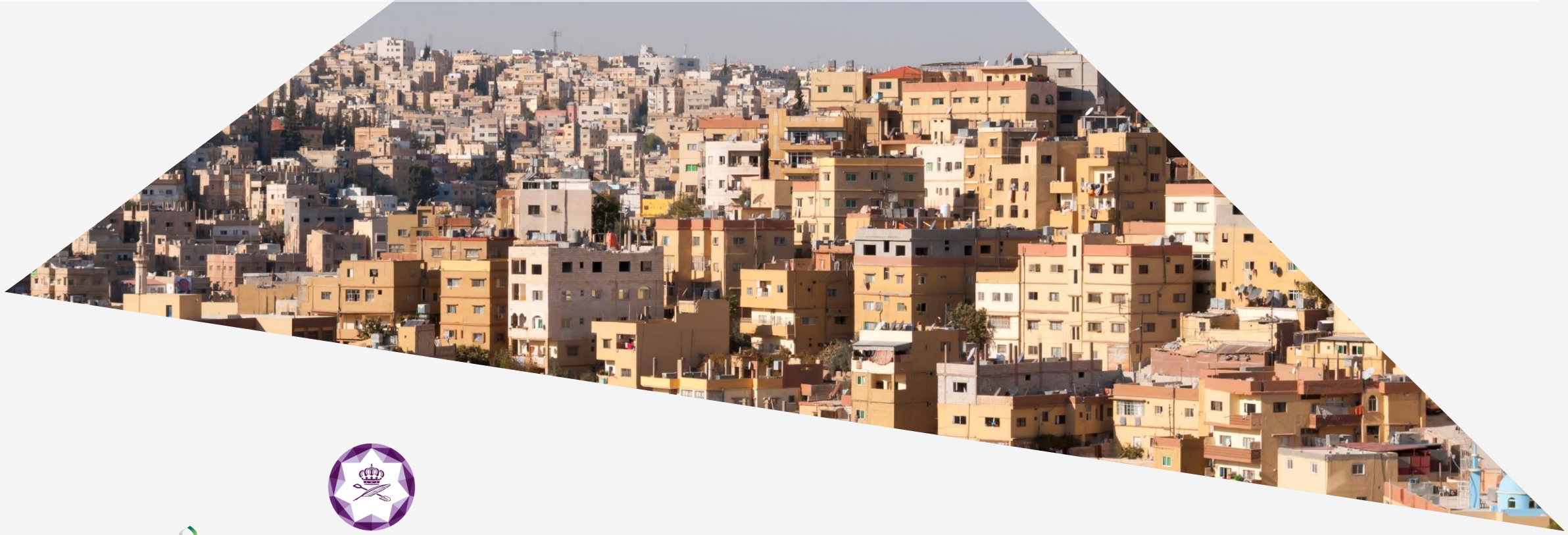
# New features of the BEP tool [BEP tool 2.0]

**Eng. Riadh Bhar Project Manager of the "BUILD_ME" from Guidehouse**



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# New features of the BEP tool

Increasing the robustness of the tool and its useability for FIs and PDs

1. **Eliminate remaining unclarities**
2. **Update cost related inputs**
3. **Illustrate useful energy**
4. **Allow a simpler calculation of existing buildings**
5. **Integrate the EPC process**

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# Update cost related inputs

Data from 2020 have been updated in 2023

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## 2020 - Input data

**Opex**

- Energy costs (electricity, gas, diesel, LPG etc.)

**Capex**

- Building envelope (thermal insulation, windows, shading elements
- HVAC (heating systems, ventilation, air conditioning, hot water)
- Renewables (Solar thermal Systems, Photovoltaics)

## 2023 - Input data

**Opex**

- Energy costs (electricity, gas, diesel, LPG etc.)

**Capex**

- Building envelope (thermal insulation, windows, shading elements
- HVAC (heating systems, ventilation, air conditioning, hot water)
- Renewables (Solar thermal Systems, Photovoltaics)



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# Illustration of useful energy demand in results

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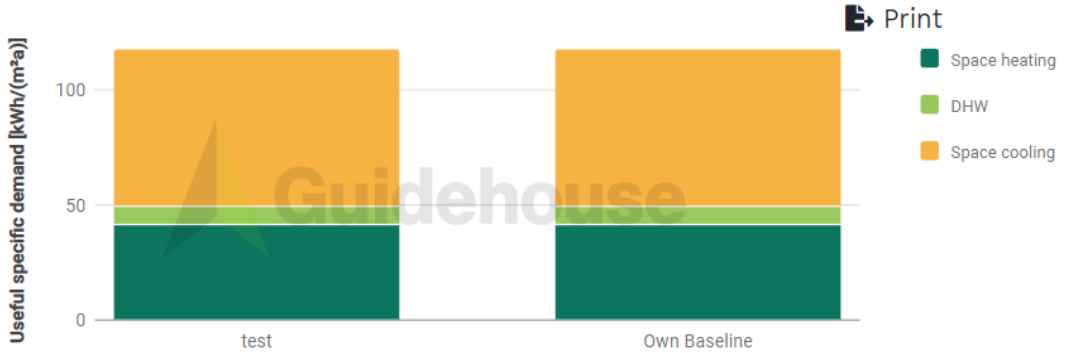
Heating: 45.47 kWh/(m²a) | Cooling: 26.98 kWh/(m²a) | Other: 36.29 kWh/(m²a) | Σ Total: 108.74 kWh/(m²a) | Performance: C

**ENERGY & ENVIRONMENT**

*Primary energy* by *energy use* | *Final energy* by *energy use* | *Final energy* by *energy carrier* | ***Useful specific demand*** | *Emissions*

Useful specific demand




kWh/(m²*a)

| | test | Own Baseline | Delta |
|---|---|---|---|
| Space heating | 41.5 | 41.5 | 0% |
| DHW | 7.9 | 7.9 | 0% |
| Space cooling | 68.5 | 68.5 | 0% |
| Total | 117.9 | 117.9 | 0% |

- Special request from national stakeholders
- The effect of building shell improvements are more visible
- Differentiate between building shell and HVAC system influences in the efficiency improvement



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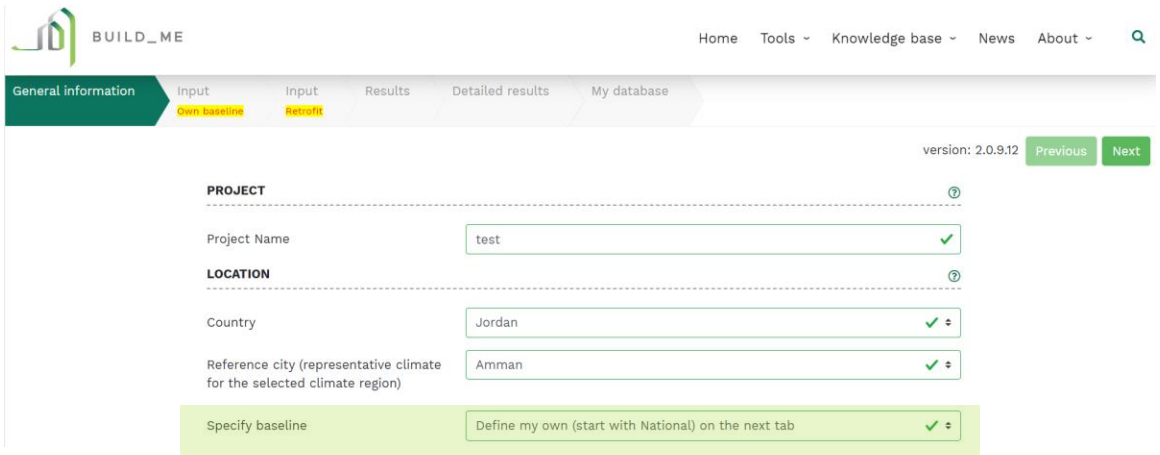
# Define own baseline to calculate existing buildings

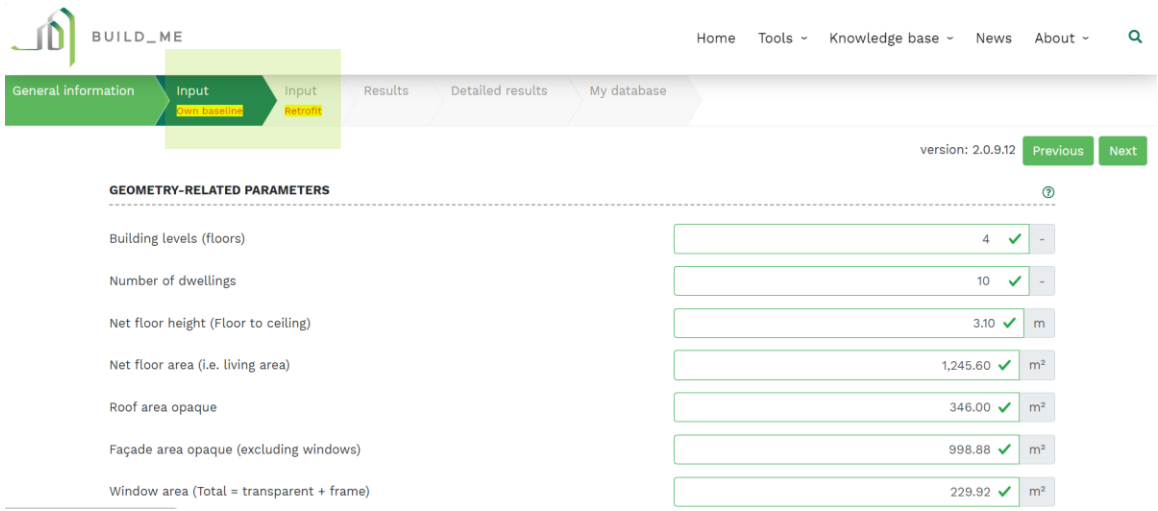
## 1| Baseline selection

User can select from predefined baselines or define own baseline




## 2| New baseline input tab

Only activated if the user select own baseline in the “Specify baseline” section




**Easy comparison of renovation projects with existing situation and national baseline (EPC)**



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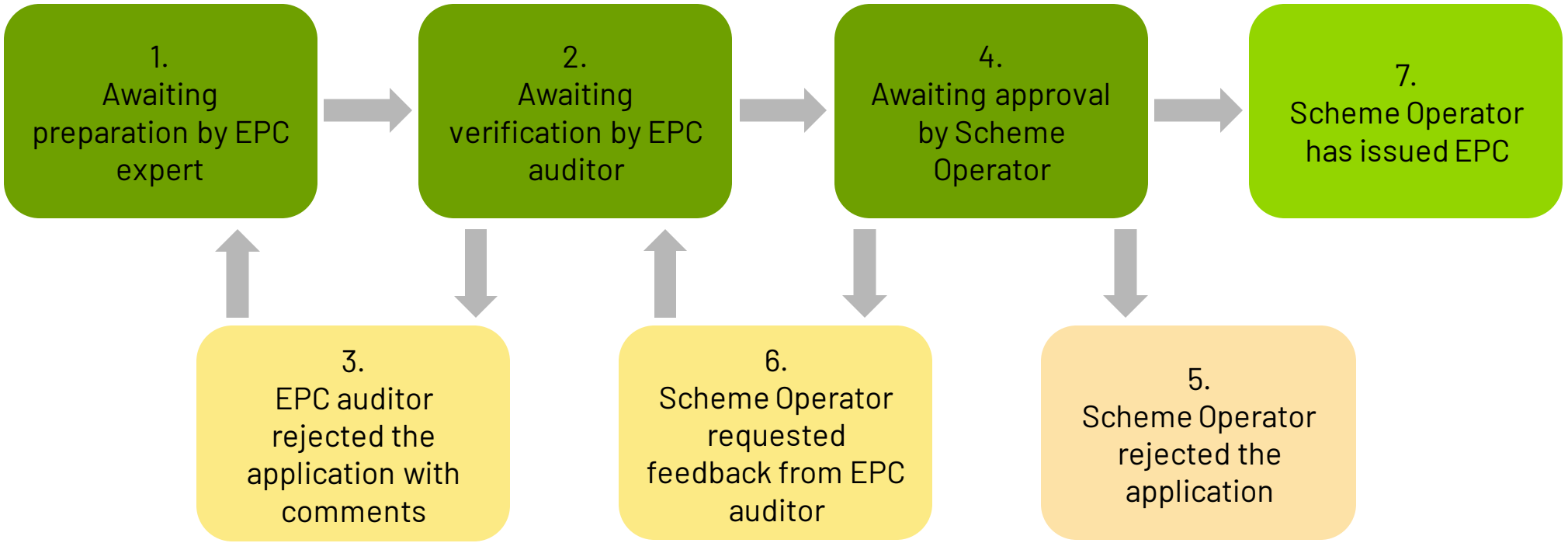
# Integration of EPC

## Workflow on the website



# Integration of EPC (Cont..)

## Workflow on the website

Save changes to project **"EPC_Test"** | Discard changes and start new project | Jince_Expert

**PROJECTS**

Show 10 entries | Search:

| Show on results tab as well | Actions | Project name | City | Last saved | Label | Delta $CO_2$ |
|---|---|---|---|---|---|---|
| | DELETE LOAD RENAME COPY Start EPC workflow | EPC_Test **<<<Current Project>>>** | Cairo | 28-Apr-2024 13:15 | B | -47.0% |
| ☐ | DELETE LOAD RENAME COPY Start EPC workflow | Aqaba_Test | Aqaba | 16-Apr-2024 19:43 | B | -35.0% |
| ☐ | DELETE LOAD RENAME COPY Start EPC workflow | EPC_Workflow_Test_3 | Amman | 03-Apr-2024 17:13 | B | -51.0% |
| ☐ | DELETE LOAD RENAME COPY | EPC workflow - Test2 EPC Project Status: [Final]7. Scheme Operator has issued the EPC | Amman | 20-Mar-2024 11:12 | B | -31.0% |
| ☐ | DELETE LOAD RENAME COPY | EPC_Workflow_Test EPC Project Status: [Final]4. Awaiting approval by the Scheme Operator | Amman | 19-Mar-2024 14:19 | B | -51.0% |

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# Integration of EPC (Cont..)

## 1| Status: Preliminary EPC

*7 Steps of the preliminary EPC workflow.*

## 2| Applicant's details

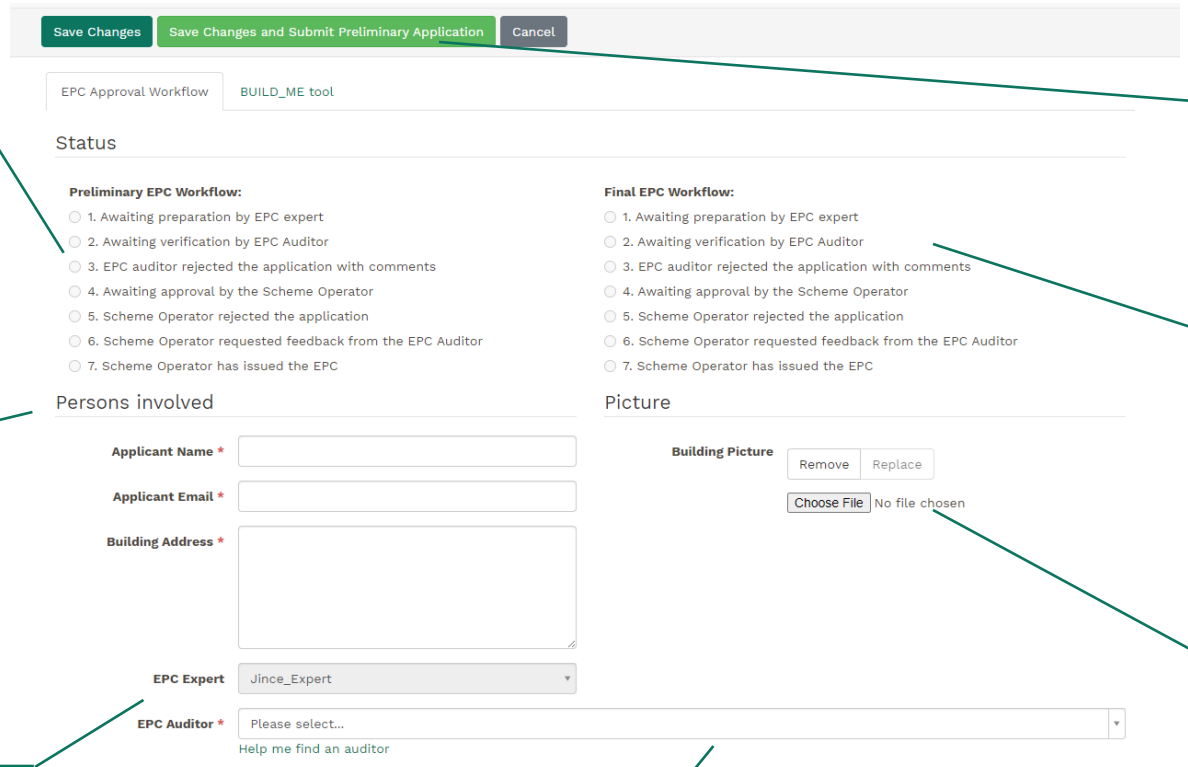
*EPC expert need to fill the details of the applicant*

## 3| EPC Expert's name

*Autofill from the login.*

## 4| EPC Auditor

*EPC Expert need to select an auditor from the list of auditors available*




## 5| Status change

*Save changes and submit the application to change the status of the project.*

## 6| Status: Final EPC

*7 Steps of the Final EPC workflow.*

## 7| Picture of the building

*EPC Expert need to upload the picture of the building*

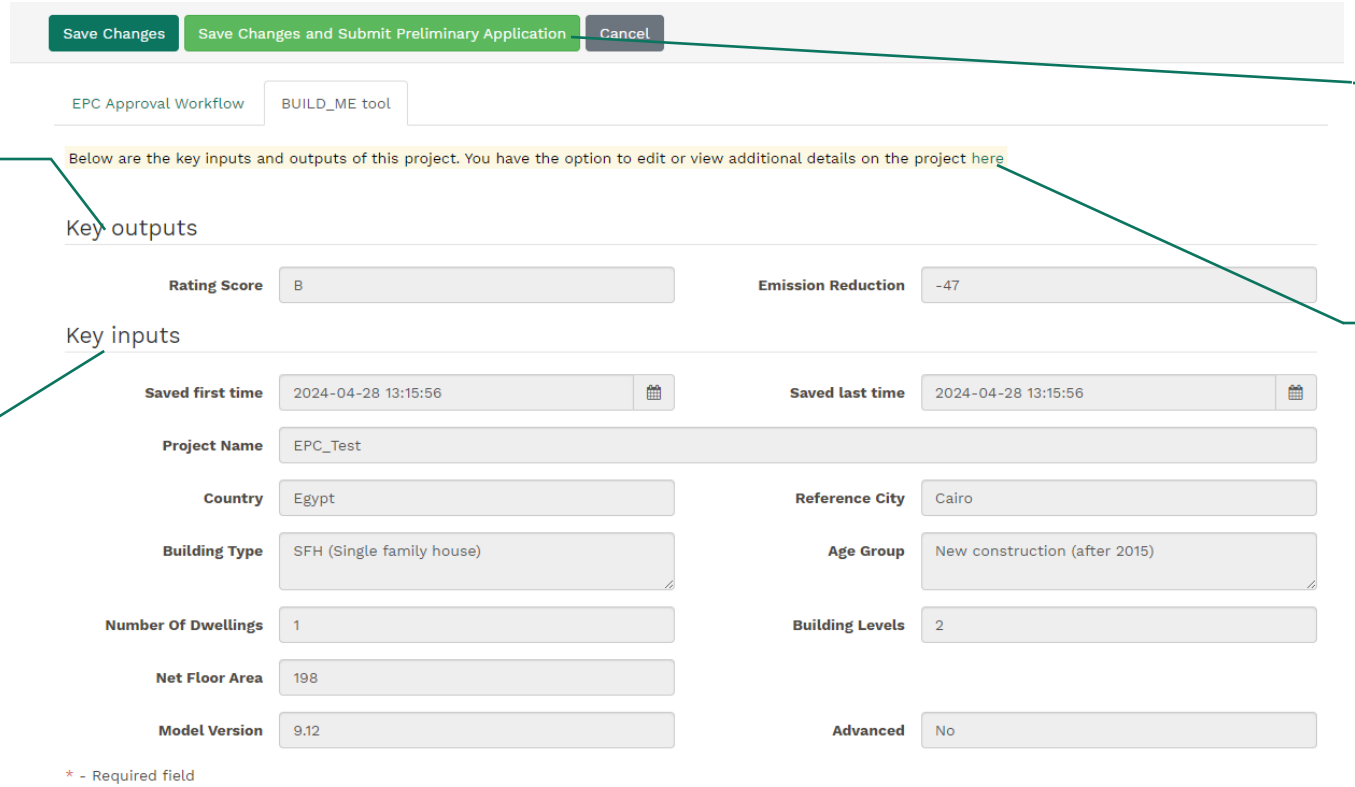
# Integration of EPC (Cont..)

## 1| Key outputs

*Key outputs for quick overview*

## 2| Key inputs

*Key inputs for quick overview*




## 3| Status change

*Save changes and submit the application to change the status of the project.*

## 4| Open BEP tool

*Link to the BEP tool for detailed verification.*

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# Output of new BEP tool

## Energy Performance Certificate (Preliminary)

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### General building info


PRELIMINARY ENERGY PERFORMANCE CERTIFICATE_for Single Family House

LCEC

VALID UNTILL 20.03.2029
CERTIFICATION NO. PRE_LEB202400002
CLIMATE ZONE Beirut

1

_GENERAL BUILDING INFORMATION

BUILDING TYPE: Single Family House
ADDRESS: Musterstraße xx, xxxxx Musterstadt, Musterland
PLANNED YEAR OF CONSTRUCTION: 2024
AMOUNT OF APARTMENTS (for MFH): 16
NET FLOOR AREA: 2600 [m²]
SPECIFIC BASELINE (National/City/Town/Village): National

_BUILDING ENVELOPE

WALL: 0,57 [W/m²K]
ROOF: 0,25 [W/m²K]
FLOOR: 1,20 [W/m²K]
WINDOW: 1,20 [W/m²K] / 0,85 [-]

_HVAC SYSTEM

AIR CONDITIONING: Single-split
HEATING: Portable LPG (gas) heater
VENTILATION: Mech. vent. w/o HR
HOT WATER: Portable LPG (gas) heater

_RENEWABLES

PHOTOVOLTAIC: 10 [kWp]
SOLAR THERMAL: 5 [m²]
OTHERS: [-]
NONE: [-]

_EPC EXPERT

NAME: Muster Name
EPC EXPERT CERTIFICATE NO.: JOR0E00025
DATE: 03.04.2024

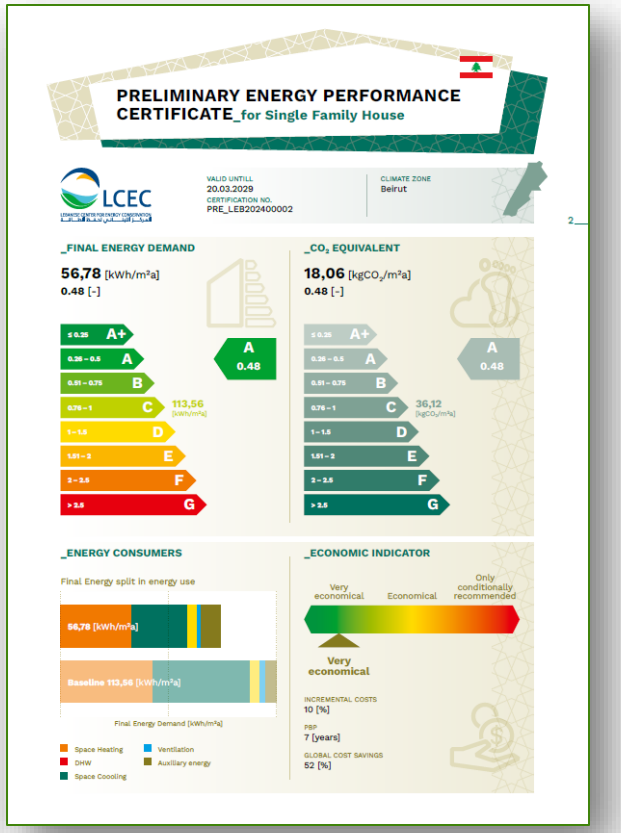
_EPC AUDITOR

NAME: Muster Name
EPC AUDITOR CERTIFICATE NO.: JOR0A00025
DATE: 15.04.2024

_CERT. AUTHORITY

NAME: Muster Name
UNIT: Musterabteilung
DATE: 05.04.2024

### KPIs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2

_FINAL ENERGY DEMAND

56,78 [kWh/m²a]
0.48 [-]

A 0.48

A+
A
B
C 113,56 [kWh/m²a]
D
E
F
G

_$CO_2$ EQUIVALENT

18,06 [kg$CO_2$/m²a]
0.48 [-]

A 0.48

A+
A
B
C 36,12 [kg$CO_2$/m²a]
D
E
F
G

_ENERGY CONSUMERS

Final Energy split in energy use

56,78 [kWh/m²a]
Baseline 113,56 [kWh/m²a]
Final Energy Demand [kWh/m²a]

Space Heating
DHW
Space Cooling
Ventilation
Auxiliary energy

_ECONOMIC INDICATOR

Very economical | Economical | Only conditionally recommended

Very economical

INCREMENTAL COSTS: 10 [%]
PBP: 7 [years]
GLOBAL COST SAVINGS: 52 [%]

### Recommendations


PRELIMINARY ENERGY PERFORMANCE CERTIFICATE_for Single Family House

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3

_RECOMMENDATIONS TO REACH ZERO ENERGY BUILDING STANDARD [A+]

| No. | Category | Measures |
|---|---|---|
| 1 | Building Envelope | Porunti omnimilitas millab inulpar ibusam cullabore, temporp oreius ullabo. Ita volorae cum quiatus apidipsant pro cum est.<br>Acepeliciis verum vellistius dendustium volupta dolore nobit utasimo lorestia voluptatin es solore es sequis seris doluptatis mo berumet aut mod quae vidella aut expligniet issenis de sed quam nihit, si dolupta velecto magnatint ea enim erum qui sequataquae. |
| 2 | HVAC | Ita volorae cum quiatus apidipsant pro cum est.<br>Acepeliciis verum vellistius dendustium volupta dolore nobit utasimo lorestia voluptatin es solore es sequis seris doluptatis mo berumet aut mod quae vidella aut expligniet issenis de sed quam nihit, si dolupta velecto magnatint ea enim erum qui sequataquae. |
| 3 | Renewables | Acepeliciis verum vellistius dendustium volupta dolore nobit utasimo lorestia voluptatin es solore es sequis seris doluptatis mo berumet aut mod quae vidella aut expligniet issenis de sed quam nihit, si dolupta velecto magnatint ea enim erum qui sequataquae.<br>Equid esequi iur sunte comnime nderum, con nullor aut quibus pos excepernatem doluptae nulluptas ium quo doluptatiani. |
| 4 | Behavior | Henisint emporep ersperum eate aliberitat pel eiur? Cipistis aut fuga. Peri archill uptata dolorem re molorepudi nonetus dolupit as simpore nienihi temporum fugitat urehendebit velignam hari quam ipsam non none pla voles doloris iunt.<br>Igender itiore velenihicat occusam, ulparch illabor epudit doluptat assequi stibus, elescilis nonet moluptatiur. |

_EXPECTED RESULTS

ENERGY: A+ 25 [kWh/m²a] 0.2
$CO_2$: A+ 5 [kg/m²a] 0.2
ECONOMY: Very economical PBP 7 [years] Global costs savings 15%

### Explanations


PRELIMINARY ENERGY PERFORMANCE CERTIFICATE_for Single Family House

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CERTIFICATION NO. PRE_LEB202400002
CLIMATE ZONE Beirut

4

_EXPLANATIONS

| Reference Page | Topic |
|---|---|
| 1 | **Building Types**_Six building types are available in the BEP tool including single-family house (SFH), multi-family house (MFH), office, educational building, shop, and hospital. This selection defines the baseline building used to compare the energy performance of the project building. |
| 1 | **Net Floor Area**_Entire conditioned area of the building. For MFH, building area is used, not apartment area. |
| 1 | **Building Envelope**_The calculation of the envelope considers the insulation of the roof, façade and surface, the windows, and the cost to increase the general airtightness of the building's envelope. |
| 1 | **HVAC**_Heating, Ventilation, and Air Conditioning. Based on air change rate, space heating, hot water generation, space cooling, and mechanical ventilation. |
| 1 | **Renewables**_Capacity of the photovoltaic (PV) system described by the power output of the entire system at standard conditions. |
| 1 | **EPC expert**_A trained EPC expert must prepare all technical and administrative documents for building energy labels on behalf of end-users, using the BEP tool. |
| 1 | **EPC auditor**_A trained EPC auditor must review all technical and administrative documents for building energy labels. |
| 1 | **EPC certification authority**_Certifying body approved to issue the EPC. |
| 2 | **Baseline**_The baseline building data was collected in 2020 and reflects real constructions. By default, every project is compared to its according baseline. In the EPC, the baseline building is represented by level C. |
| 2 | **Final energy**_Total energy consumed by end users. |
| 2 | **$CO_2$e**_Carbon dioxide equivalent represents the impact of different greenhouse gases (GHGs) and their equivalent global warming impact. |
| 2 | **Energy consumers**_Equipment consuming the most energy in the building. |
| 3 | **Economic indicators**_Incremental costs represent the costs in addition to baseline for selected measures. Payback period is the amount of time required for the investment to recover its initial outlay in terms of energy savings. Global cost savings refers to the benefits realised from the energy savings actions. |
| 3 | **Zero Energy Building Standard [A+]**_A new or renovated net-zero building is highly energy efficient, does not cause any on-site GHG emissions from fossil fuels, and reduces embodied carbon to a significant extent. It uses renewable energy, preferably generated on-site, if technically feasible, and/or off-site to fully cover its remaining, very low energy use. |
| 3 | **Expected results**_Expected energy savings, $CO_2$e, and economic indicators calculated from planned energy efficiency measures. |
| ... | |
| ... | |



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# Output of new BEP tool

## Energy Performance Certificate (Final)

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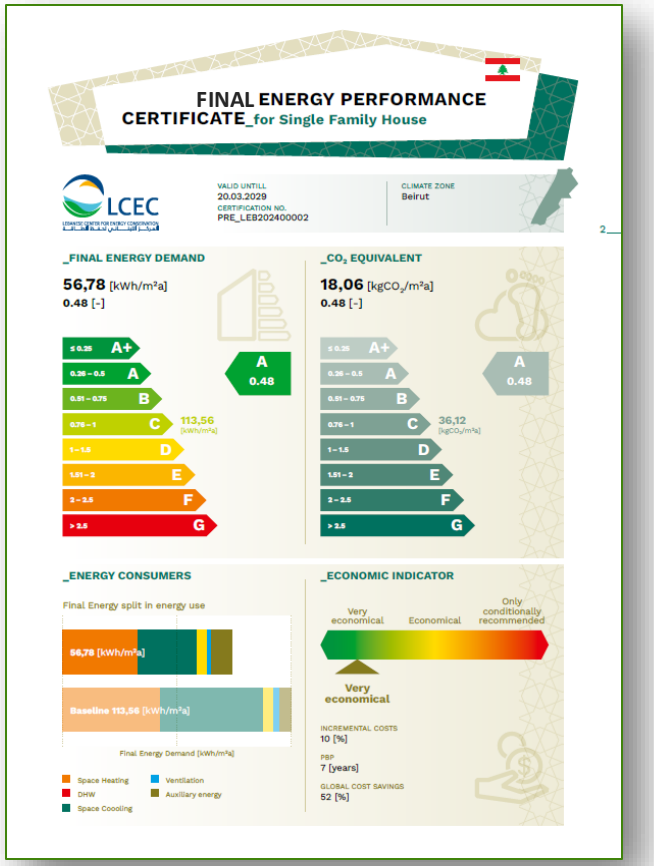
### General building info


### KPIs




### Explanations

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# Discussion

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# Coffee break

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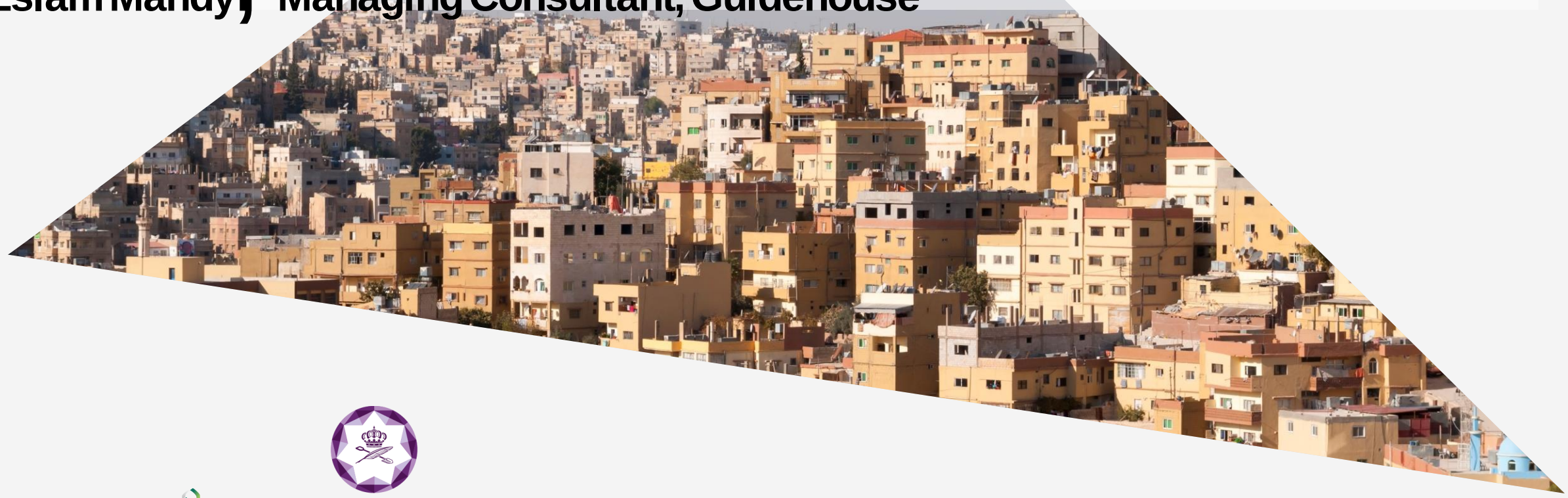
# Outlook: What are our next steps?

# Strategic partnerships with Financial Institutions

Eslam Mahdy, Managing Consultant, Guidehouse



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# Why are climate-friendly buildings relevant for financial institutions?

Green buildings becoming more and more a billion-dollar market

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"Green buildings represent a major global investment opportunity, with buildings making up the largest segment of the **US$ 231** billion energy efficiency market."

European Bank
for Reconstruction and Development

" During the next decade, green buildings represent a significant low-carbon investment opportunity in emerging markets **$24.7 trillion** by 2030."…

IFC
International Finance Corporation
WORLD BANK GROUP

" Global green building materials market size is expected to reach **$377,029 million by 2022 from $171,475 million** in 2015 with a CAGR of 11.9% from 2016 to 2022….

Allied Market Research



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# Why are climate-friendly buildings relevant for financial institutions?

## MFP to design financial products for green and sustainable buildings

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### Regulation and compliance

To comply with the progressive sustainability regulations that requires more transparent disclosure on environmental indicators.

### Construction Market size

To meet the growing demand on financing real estate and construction projects.

### International Mega-trends

The enormous environmental and sustainability trends will create a lot of opportunities and risks.

**The financial sector is globally-bounded.**
**Changes in regulations at the international and European levels will influence MFPs globally.**



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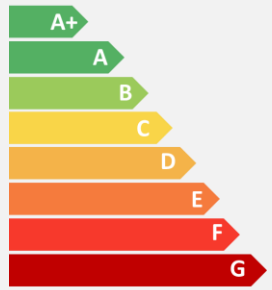
## What is the Energy Performance Certificate for buildings?

Energy Performance Certificate EPC for a building is an important policy and regulatory instruments that help improve the energy performance of the buildings. EPC shows the level of the energy efficiency of the building explained in a label, the building energetic characteristics, and includes recommendations about the potential energy-saving measures for a property.




| | Energy [kWh/m²a] | Energy costs | Indoor Comfort | Emissions [kgCO2/m²a] |
|---|---|---|---|---|
| 0.76 – 1 C | 110 | Baseline | Baseline | 50 |
| 0.51 – 0.75 B | 56-83 | ≈ 25 - 50% less | Improved comfort level | 25-36 |
| 0.26 – 0.5 A | 28-55 | ≈ 50 – 75 % less | High comfort level | 13-24 |
| ≤ 0.25 A+ | ≤ 27 | ≤ 25 less | Very high comfort | 12 |

*results of an exemplary MFH in Cairo



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# How EPC maybe used to accelerate the transition

## German example: KFW programmes

- Financial support by the KfW provides incentives for energy efficient building and renovation. The programme supported more than 4 million dwellings since its inception in 2006.
- Energy efficient refurbishment: Single energy efficiency measures (e.g., new windows, insulation, heating system).
- Energy efficient construction: Loans and grants were provided for new constructions meeting the requirements of KfW Efficiency House **70, 55, or 40.**


- Sources: achportal Energieeffizientes Bauen und Sanieren
- BMWi Federal Ministry for Economic Affairs and Energy, 2015

- The institutional structure in Jordan can adopt such a policy instrument.
- All key stakeholders are functioning already in Jordan.

# Matchmaking between FIs and project developers

## One of the BUILD_ME´s objective

### FIs and Banks sustainable finance offerings for green buildings

- Survey to list the financial products available.
- Identify the target groups of the financial products.
- Identify the conditions of the sustainable finance offerings.
- Summarize the finance conditions for pilot project developers.

### Matchmaking

BUILD_ME team will facilitate and coordinate the collaboration between project developers and FIs to use the EPC and the BEP Tool.

### Project developers of green buildings

- Identify a long list of green buildings project developers.
- Identify the key characteristics of the projects including size, building types, and ownership structure.
- Understand finance-related decisions

# BUILD_ME engagement with Banks and FIs.

- In Jordan, BUILD_ME team has approached the banks centrally through the communication with The Association of Banks in Jordan.
- Green Finance Strategy published by the Central Bank of Jordan in 2023 refers directly to the green buildings as sector to implement the RBCF (results-based climate finance).
- The Central Bank of Jordan will accept the EPC after adopting it by the national responsible authority, namely the JNBC.


**Carbon Finance or RBCF Use Case for Greening the Financial Sector: A Sectoral Soft Loan Program for Green Buildings**

**This use case is focused on the example of soft loans for energy-efficient building renovation** (renovations to upgrade the energy efficiency of buildings). A soft loan program for energy-efficient building renovation is a proven approach to generating large-scale emission reductions and transforming a significant sector of the economy. An example is the German KfW energy-efficient building refurbishment program, which has been in existence for almost 20 years. KfW, a state-owned German domestic development bank, provides below-market refinancing and public subsidies to commercial banks for standardized green building loans to private households in Germany. This on-lending system has reached millions of homes and achieved substantial contributions to Germany's greenhouse gas mitigation goals. Achieved emission reductions are estimated using a modeling approach based on individual project data collected from the borrowing households.[123]



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# BUILD_ME engagement with Banks

EBRD

BUILD_ME scheme and the BEP Tool in the final phase to receive the official approval from the European Bank for Reconstruction and Development EBRD to be used to qualify projects for green finance in Egypt and Jordan. More details to be announced soon.

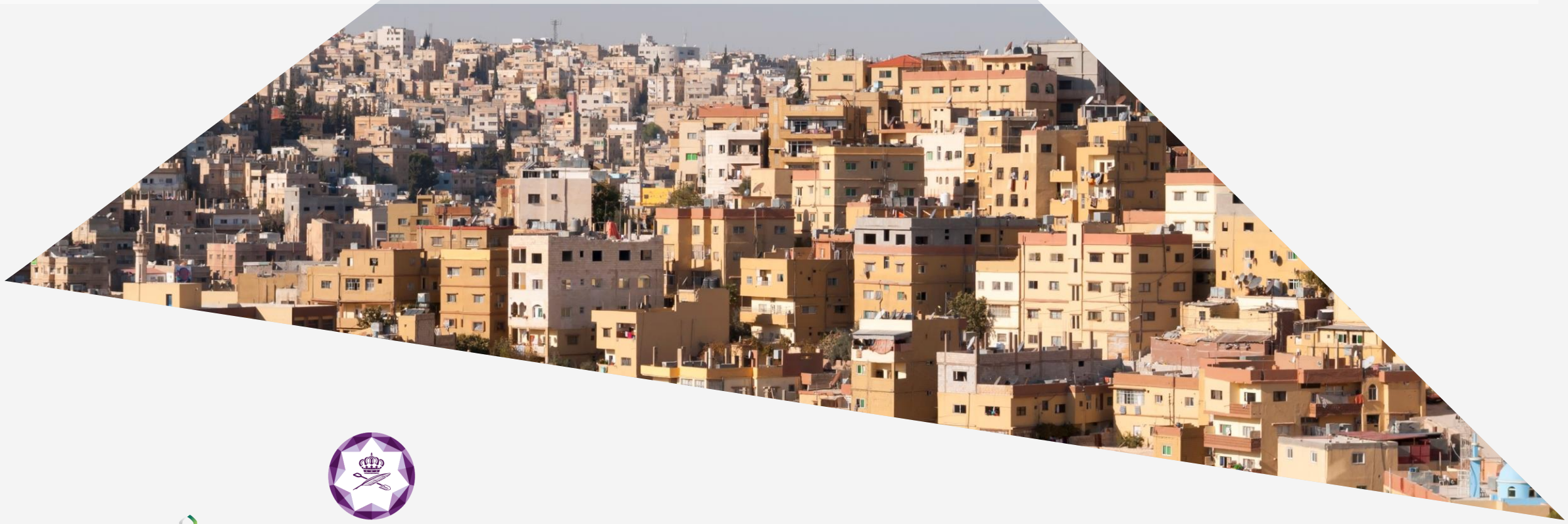
# Questions and discussions


BUILD_ME project aims to enable the Financial institutions to use the BEP tool and the EPC rating system for evaluating the building projects and hence facilitating finance for green and EE buildings.

**What are the key actions may recommend? This may include additional regulatory or policy instrument, raising awareness, and coordinating between FIs and Pilot projects.**

# Introduction to tailored trainings

**Eng. Riadh Bhar Project Manager of the "BUILD_ME" from Guidehouse**



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# Trainings

## Concept of target orientated capacity building – 4 target groups

### Finance and Project Developers

Be aware of benefits

### EPC Expert

Apply the scheme

### EPC Auditor

Check and approve

### Certifying Authority – EPC Owner

Oversee and manage

# Target orientated capacity building

## Finance and Project Developers

**Target audience:**

- Financial Institutions
- Architects, Municipalities, Project developer

**Objective:**

- Increase awareness of the importance and financial attractiveness of investing in EE measures
- General understanding of the BEP tool and EPC scheme
- Understand the added value of certificate scheme

## EPC Expert

**Target audience:**

- Academic title in relevant field

**Objective:**

- Confirm the basic understanding of EE/RE measures and their impact on Buildings Energy Performance
- Understand the overall process
- Enable the utilization of the tool and all reporting formats (EPC process)

# Target orientated capacity building

## EPC Auditor

**Target audience:**

- Academic title in relevant field (EPC expert + 3 years hands on experience with low energy buildings)

**Objective:**

- understand the importance and role of EPC Auditor
- Understand the Audit process
- Enable utilization of the tool and reporting formats
- Assess whether the building meets the EPC requirements
-

## Certifying Authority – EPC Owner

**Target audience**:

- Certification authority representatives

**Objective**:

- Explain the overall EPC process
- Reporting and issuing of the EPC
- Supporting tools
- Issue and review tests & exams

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# Trainings

## Eligibility Criteria

### Certifiers

**EPC Expert Eligibility Criteria**

- Hold a higher education qualification in a construction industry related field.
- +3 years of practical work experience in the construction industry.

### Auditors

**EPC Auditor Eligibility Criteria**

- An EPC Expert or other equivalent certificates (e.g., EDGE, LEED and BREEAM) or +1 year of practical work experience with a qualified ESCO
- Hold a higher education qualification in a construction industry related field.
- +3 years of practical work experience in the construction industry.

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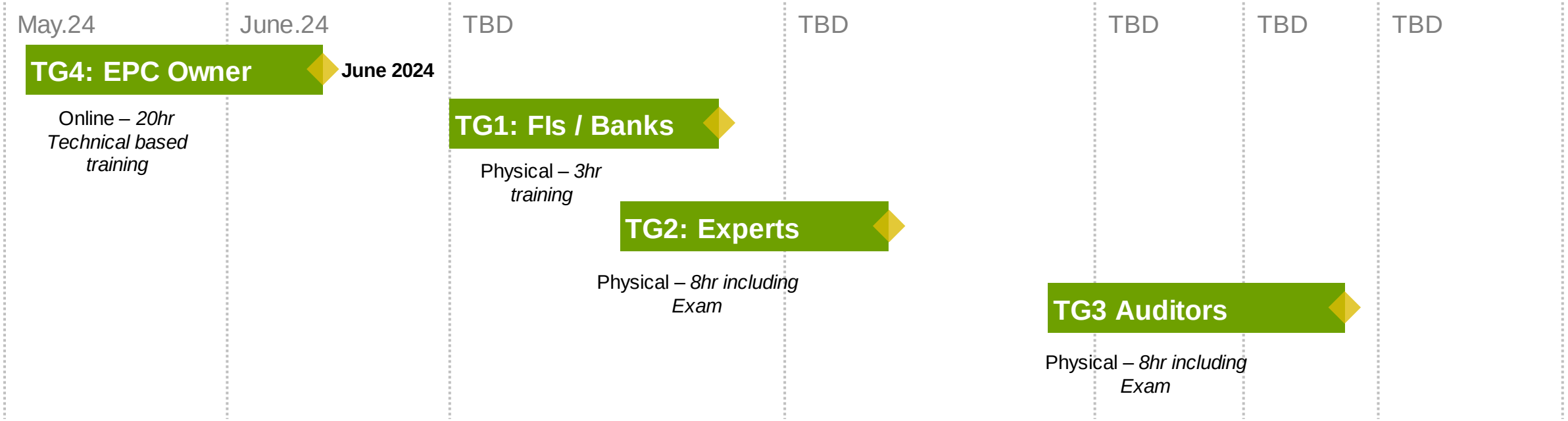
# Trainings

## Planned dates & duration




- Exam held two weeks after taking the training

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# Additional next steps

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# Status of BUILD_ME 3 progress

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| | Outputs | Indicators | Status |
|---|---|---|---|
| 1. Technical Framework | National building classification system is operational in target countries and the BEP tool is expanded. | I.1 further developed BEP tool<br>I.2 National building classification schemes | Almost done |
| 2. Financial Framework | Financial institutions can assess, and finance low-energy buildings based on the BEP tool and/or the classification system | II.1 The BEP tool is adapted by financial institutions.<br>II.2 The exchange between project developers and FIs is established. | About 50 % |
| 3. Dissemination & Capacity Building | Knowledge of "local" interest groups for low-energy buildings is expanded in the target countries | III.1 Online seminars, national and regional workshops.<br>III.2 Training on the BEP tool and classification scheme. | About 50 % |
| 4. Regulatory Framework | The political and regulatory framework for energy efficiency in buildings has been improved | IV.1 Demand-oriented support of national strategies<br>IV.2 The macro-level benefits of EE buildings have been analyzed. | To be started |



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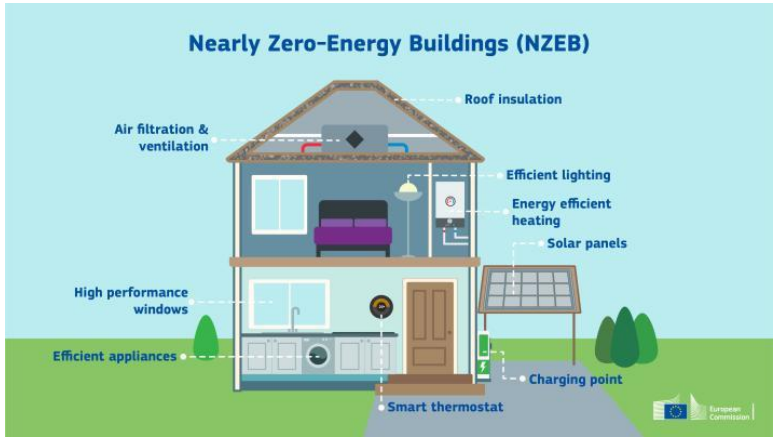
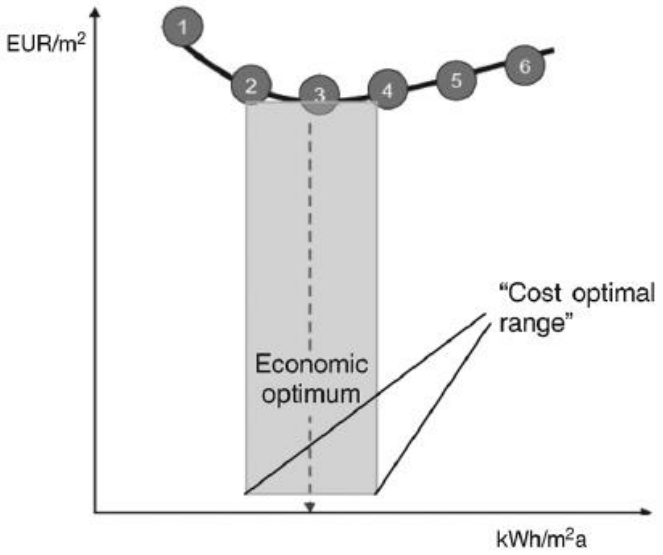
# Next steps in BUILD_ME 3

## 1. Technical studies supporting regulative framework

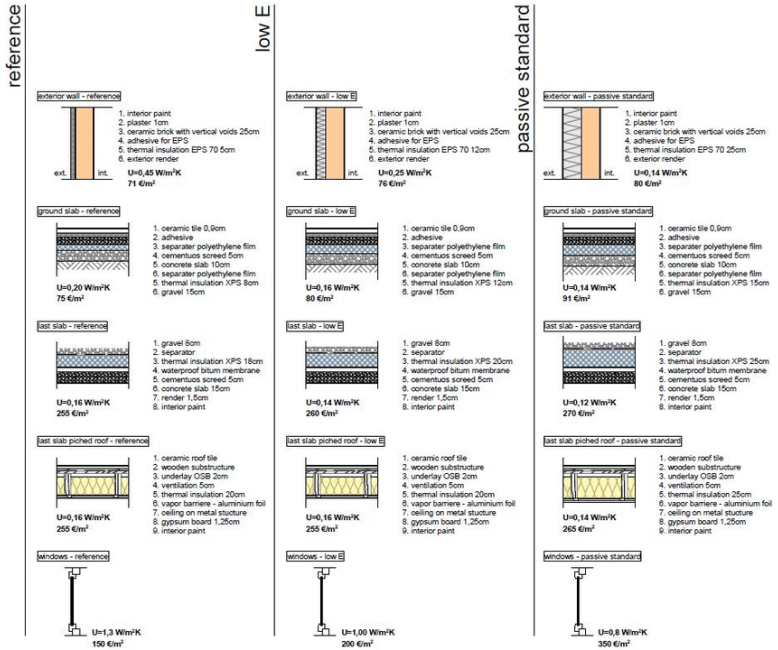
### ZEB definition




### Cost Optimality Study




### Building Component Database



# Next steps in BUILD_ME 3

## 2. Financial Framework

Waiting for approvals from FIs

Support FIs with the integration of the EPC in their processes

Reach out to PDs (with EPC and financial offerings)

# Next steps in BUILD_ME 3

## 3. Dissemination and (Capacity building)

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3rd webinar: 6th June 2024

4th webinar: Nov/Dec 2024

Regional conference: Q1/2025



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# Next steps in BUILD_ME 3

## 4. Political and regulatory framework

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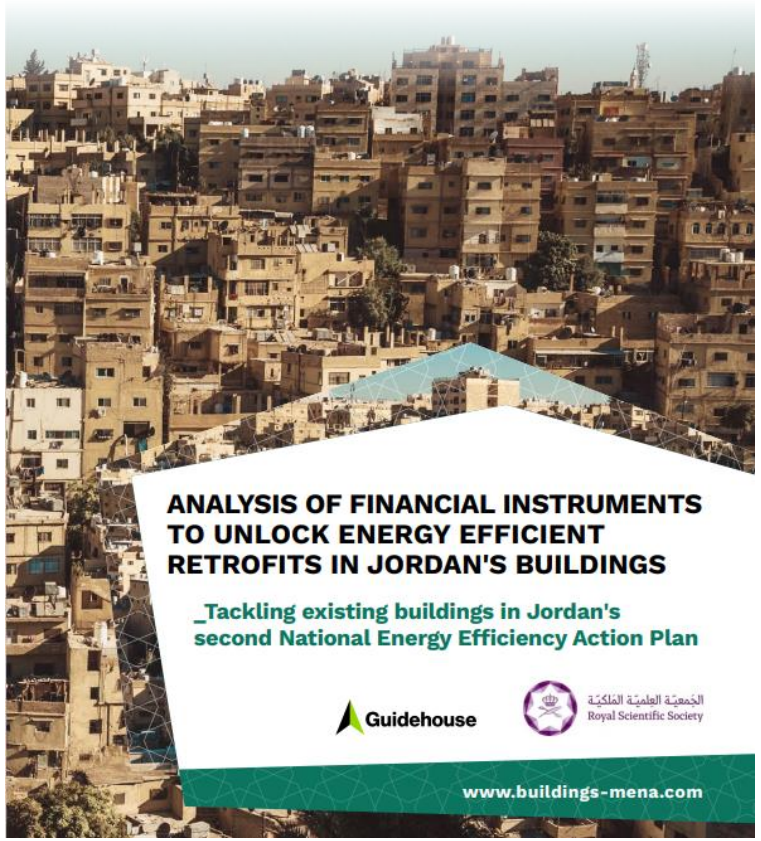
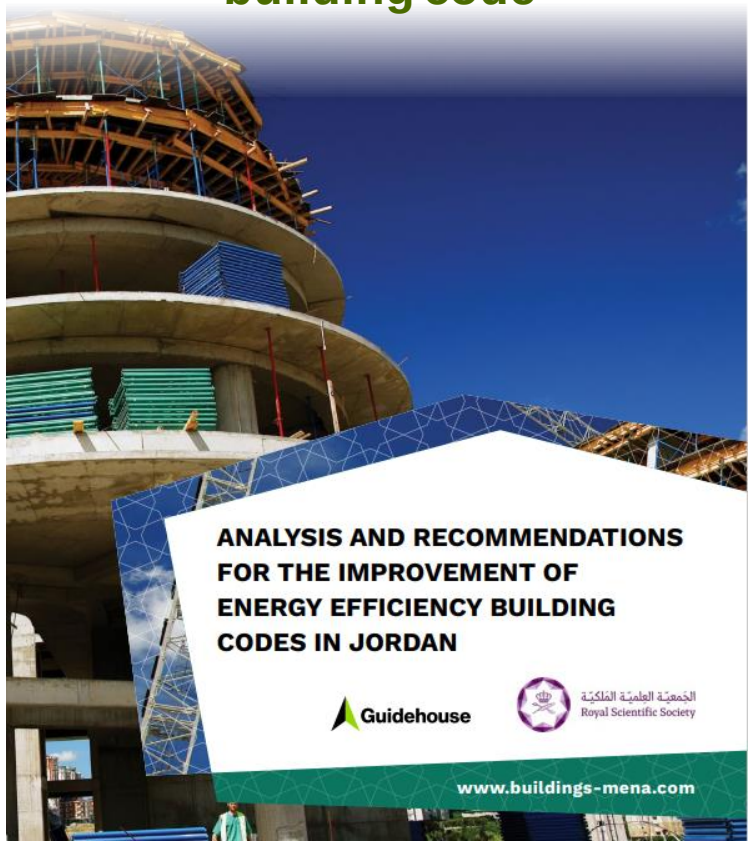
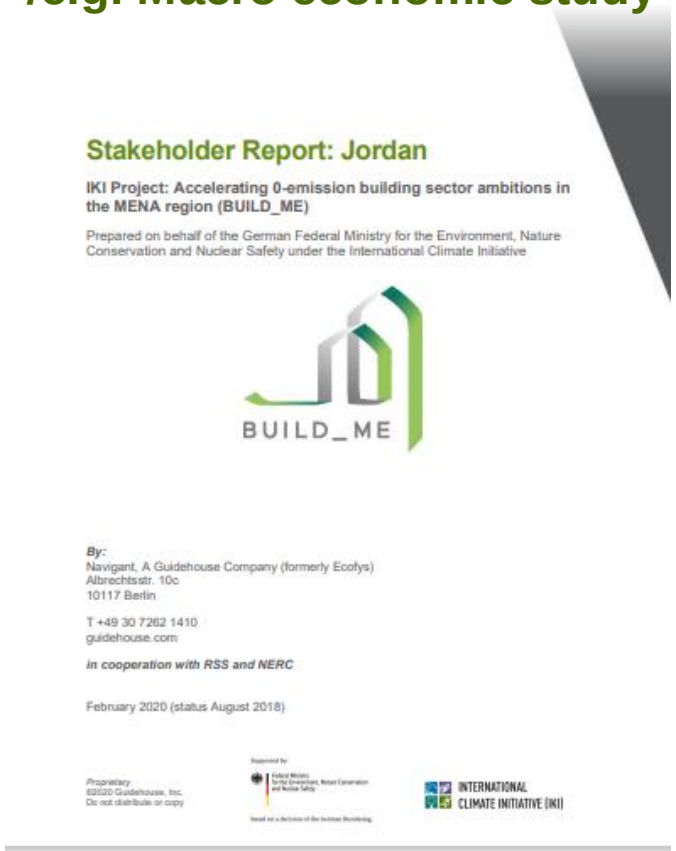
### Support national strategies




### Support energy efficiency building code




### Demand driven consultancy /e.g. Macro economic study



Stakeholder Report: Jordan

IKI Project: Accelerating 0-emission building sector ambitions in the MENA region (BUILD_ME)

Prepared on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety under the International Climate Initiative

BUILD_ME

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*in cooperation with RSS and NERC*

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INTERNATIONAL CLIMATE INITIATIVE (IKI)



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# Discussion

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# Survey

## BUILD_ME National WS - Amman, Jordan

https://forms.office.com/r/ffMs0GeNvf

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# Closing Remarks

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# Group picture

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Royal Scientific Society

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